and not indiscriminately. His quarry was the mountain sheep of the Upper Yukon basin; for it was incidentally his object to clear up the relationship of the local varieties or subspecies of this animal. In the event he is able to show that the three forms *Ovis dalli, O. fannini, and O. stonei* merge imperceptibly into each other.

The main hunting-grounds described in the book lie in three separate parts of the little known mountainous country forming the eastern side of the Upper Yukon basin, and in each case the author believes that he broke new ground. His descriptions of the wild life of the region are touched in graphically, yet with due restraint; while the physical features of the land are readily deducible from the narrative and from the accompanying illustrations.

It is inevitable in a book of this type that there will be passages likely to give pain to a reader to whom the slaughter of wild animals is repellent. For instance, anyone but a toughened hunter may wince, after reading of the killing of a she-bear, to find mention of "the wailing of the cub pealing wildly through the mists above" among the author's night-impressions that brought to him "the wild enchantment of the wilderness" (p. 30). In recording another and still more painful incident of the chase, the author himself is moved to consider the singular psychology of the hunter-sportsman in whom "an intense fondness for the wild animals" is combined with "his paradoxical love of hunting and killing them" (p. 46). Is it not, indeed, just one among the many of men's doings in which there is a present-day clash between old-rooted instincts and new-born sympathy, with instinct proving in most of us, as yet, the stronger?

One of the author's journeys was made in companionship with another mighty hunter, Mr. F. C. Selous, who has already published an account of the trip. Thus, in a few instances, the sportsman-reader can refer to two separate and independent narratives of the same chase.

The author's sincere eulogium on the ably-recorded exploratory work of the late Dr. G. M. Dawson, of the Geological Survey of Canada, on the head-waters of the Yukon (pp. 185–7), will be read with pleasure by all who cherish the memory of that most capable and indomitable man.

Besides its numerous photographic illustrations of the usual type, the book is embellished with some spirited coloured pictures of animal life, by C. Rungius. The appendices include a short bibliography; a list of animals; a reprint of the original descriptions of northern sheep; and a table of horn-measurements.

G. W. L.

HANDBOOKS ON ANALYTICAL CHEMISTRY.

(1) *Huiles Minérales: Pétroles, Benzols, Brais, Paraffines, Vaselines, Ozokérite.* By Henri Delahaye. Pp. 215. (Paris and Liège: Ch. Béranger, 1911.) Price 4 francs.

(2) *Matières Tannantes Cuirs: Gélatines, Colles, Noirs, Cirages.* By L. Jacomet. Pp. 249. (Paris and Liège: Ch. Béranger, 1911.) Price 5 francs.

(3) *Soude-Potasse-Sels: Dénaturation des Sels.* By P. Méker. Pp. ii+245. Paris and Liège: Ch. Béranger, 1911.) Price 5 francs.

(4) *Alcools: Alcool, Alcool Dénaturé, Dénaturants.* By M. Louis Calvet. Pp. viii+376. (Paris and Liège: Ch. Béranger, 1911.) Price 6 francs.

(5) *Les Matières Cellulosiques: Textiles Naturels et Artificiels Pâtes à Papier et Papiers.* By Prof. F. J.-G. Beltzer and J. Persoz. Pp. xv+454. (Paris and Liège: Ch. Béranger, 1911.) Price 7.50 francs.

(Manuels Pratiques d'Analyses Chimiques. Publiés sous la direction de M. F. Bordas et M. E. Roux.)

THESE five volumes belong to a collection of practical manuals of analytical chemistry produced under the direction of MM. Bordas and Roux; they are intended for the use of French official laboratories, and of technical chemists generally. They give an outline of the chemistry of the products in question, with concise directions for the analytical examinations required. In the case of the first four volumes, the purely chemical matter is supplemented by copies of the official stipulations or fiscal regulations bearing on the use of the various commodities in France, and, in the case of alcohol, in other countries also.

(1) In this work the opening chapter deals with the definition and classification of petroleum products, leading up to the detailed instructions for their analysis and discrimination. The usual physical and chemical operations required in the technical examination of these products are described, including the determination of the density, viscosity, flashing-point, behaviour on burning, and examination by fractional distillation. Following this comes a section upon the interpretation of the results obtained; this includes a number of examples *in extenso,* illustrating the methods of distinguishing between Russian, American, and Roumanian types of petroleum products. Shale oils, paraffins, mineral waxes, bitumens, and benzols are each accorded a short section; whilst an appendix includes descriptions of certain special methods devised to discriminate Russian from American petroleum, and also to solve the problem—not always a simple one—of

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analysing mixtures containing members of both the paraffin and the benzene series of hydrocarbons. Within its somewhat limited scope, the volume is a useful laboratory handbook.

(2) The last remark applies also to M. Jacomet's little work on the chemistry of tanning materials and leather. The recognised methods of examining these products are given, including Proctor's well-known tables for the identification of natural tannins, and those of Andreasch for the recognition of the particular tannin which has been employed in producing a given specimen of leather. In addition, sections are devoted to other substances connected with the leather industry, such as glue, gelatine, gum, and other adhesives, varnish, and polish; these sections are by no means the least valuable. The work is packed with the kind of information which the leather chemist wants in his everyday tasks, and it deserves a cordial word of praise.

(3) More than a third of this volume is taken up by copies of the French fiscal regulations relative to soda and salt. Of the remainder, a substantial proportion has reference to the analytical examination of denatured salt—that is, salt which, to exempt it from taxation, has been rendered unfit for table use by an admixture of various substances, ranging from wallflower essence to sulphate of mercury. For a free trade country this has only a remote interest. The rest of the book contains concise directions for the analysis of sodium and potassium hydroxides, and of such of the salts of these elements as have pharmaceutical or industrial importance.

(4) The "alcohols" which form the subject of this volume are the various forms of ethyl alcohol used in manufactures. Spirituous liquors employed as beverages are excluded. In addition to details of the methods for estimating secondary products (fusel oil, aldehydes, esters, acids) required in the ordinary analysis of commercial alcohol, the chemical matter comprises descriptions of the official methods used in France and other countries for the detection and determination of various denaturing substances. These include methyl alcohol, acetone, "benzine," ether, turpentine, mercuric chloride, pyridine, and so forth. A few unofficial processes are also given, but the author disclaims any attempt at bringing together all the known analytical methods which have been devised for examining alcohol. A chapter which will occasionally be useful to the specialist gives a *résumé* of the legislative enactments concerning industrial alcohol in European countries and in the United States. It has not been brought up to date, however, so far as the United Kingdom is concerned; the "ordinary" methylated alcohol described on p. 63 was abolished more than five years ago, and its place taken by "industrial" alcohol, denatured with five (not ten) per cent. of wood naphtha.

The work includes a number of tables for use in alcoholometry. It is a serviceable volume, but is written, of course, especially from the French point of view.

(5) Considering the small size of this volume, and its other contents, the authors have managed to give in it a very full account of the chemistry of cellulose, so far as we at present know it. The constitution of the cellulose molecule is still a matter of debate, though something substantial has been done towards the elucidation of the problem. In the celluloses and their compounds it has been shown that alcoholic, aldehydic, and ketonic properties exist, and theories of constitution based on these and other facts have been proposed. Useful in a provisional and suggestive sense these theories certainly are, but none are regarded as definitely established, and until the question is settled the chemistry of cellulose must remain a more empirical matter than that of benzene and its derivatives, for example.

The present position can be gathered from the volume under notice, and the authors express the hope that their work will facilitate research by guiding the reader through the maze of published investigations. This it is well calculated to do. It does not, however, deal only, or mainly, with the pure chemistry of the subject. It is essentially a practical treatise, and gives working details of the examinations required in the various branches of the industry. The theoretical side is nevertheless kept in view, and copious references are supplied. In the sections devoted to lignocelluloses and paper there are numerous illustrations of fibres and apparatus.

Judging by the five examples now published, this series of handbooks promises to be a useful and trustworthy one. C. S.

OUR BOOKSHELF.

An Australian Bird Book: a Pocket-book for Field Use. By J. A. Leach. With introduction by Frank Tate. Pp. 200. (Melbourne: Whitcombe and Tombs, Ltd., 1911.) Price 3*s.* 6*d.*

THIS useful book is intended as a pocket-book for field use to enable teachers and observers generally to name the birds they meet with. It deals with 395 species—a considerable proportion of the Australian avifauna, the balance being made up mainly of birds closely related to those of which illustrations are given, or of very rare birds restricted to a small area. The plan of the book is to indicate by numbers the strength and distribution of the various families of birds over the world in general, and especially in Australia, and to give

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